

Reel #503

Shashkov, A.H.

L 01499-66 EWT(m)/EWP(j)/T/ETC(m)/EPF(c) WW/RM

ACCESSION NR: AP5014740

UR/0201/65/000/001/0064/0068

AUTHORS: Shashkov, A. H.; Abramenko, T. N.

21
B

TITLE: Method of continuous measurement of the thermal conductivity (concentration) of a binary gas mixture

SOURCE: AN BSSR. Izvestiya. Seriya fiziko-tehnicheskikh nauk, no. 1, 1965, 64-68

TOPIC TAGS: thermal conductivity, concentration, gas mixture, heat measurement

ABSTRACT: The authors describe a bolometric method of determining the time-varying concentration of a controlled fraction in a carrier gas from the change in the thermal conductivity of the mixture. The method consists of varying the current through an electrically heated wire placed in the gas stream in such a way that the wire temperature remains constant under all variations of the medium.

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The schematic diagram of the measurement circuit is shown in Fig. 1 of the Enclosure. The theory of the method is described and the equations for the temperature and current changes are derived under certain simplifying assumptions. The concentration of the controlled gas can be determined from the change in its thermal conductivity, which in turn can be derived from the change in the current. Advantages claimed for the measurement system are low time lag, small nonlinear distortion, independence of the measurement results of the fluctuations in the wire temperature, possibility of taking into account end effects, and sufficiently high sensitivity. Orig. art. has: 2 figures and 14 formulas.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 01

SUB CODE: TD, ME

NR REF SOV: 001

OTHER: 001

Card 2/3

L 01499-66

ACCESSION NR: AP5014740

ENCLOSURE: 01

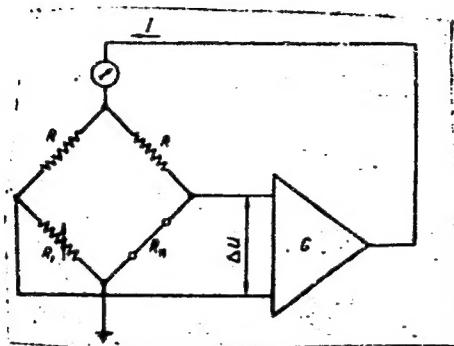


Fig. 1. Schematic diagram of measurement

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SHASHKOV, A-N

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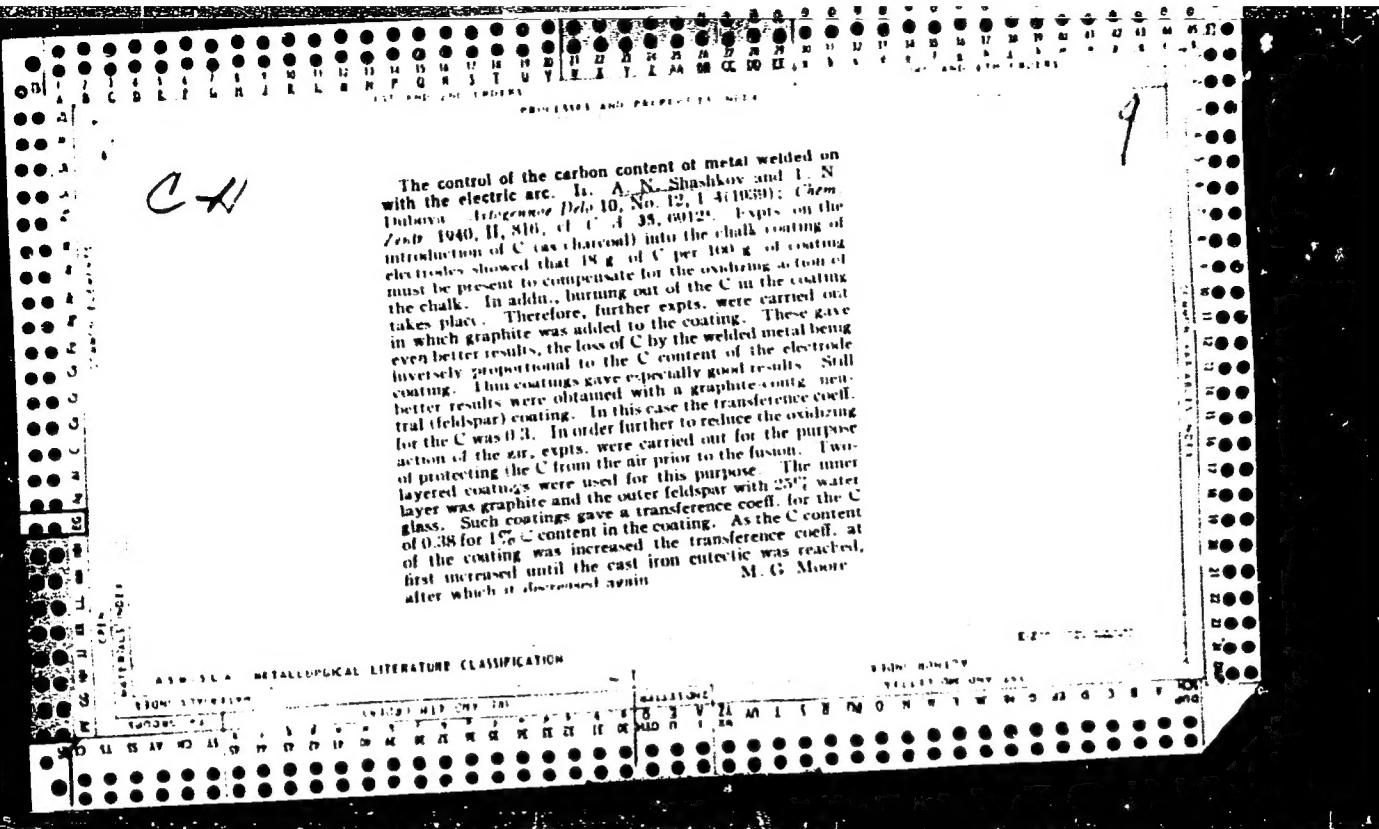
Obtaining hard coatings of synthetic high-chromium steel by arc welding. A. H. Shashkov and E. A. Bayt. *Vestnik Metalloprosm*, 1938, No. 30, 11-21. Papers on melting hard tool-steel coatings on ordinary iron were carried out by means of an elec. arc with electrodes coated with materials to be melted. The electrodes consisted of 4-mm. wire analyzing 0.15 C, trace Si, 0.49 Mn, 0.019 S and 0.021 P. The coatings consisted of mixts. of Fe-Cr, analyzing 2.46 C, 1.60 Si and 66.28 Cr; Fe-Ti, analyzing 0.11 C and 20.0 Ti; Fe-Mo, analyzing 0.18 C and 45.37 Mo; Fe-V, analyzing 0.00 C and 78.58 V, graphite, analyzing 85.01 C, 0.1 S, trace P and 1.62 SiO₂; titanium ore, analyzing 37.8 TiO₂, 3.0 SiO₂, 3.2 Al₂O₃ and 57.2 Fe₂O₃. Chem., meca. and microscopic analyses were then made of the melts. The best results were obtained with electrode coatings made of the following mixts. 1 wt. %: (1) 80 Fe-Cr, 10 graphite, 10 Ti ore, (2) 75 Fe-Cr, 10 graphite, 10 Ti ore, 5 Ni, (3) 70 Fe-Cr, 10 graphite, 10 Ti ore and 5 Fe-V. S. L. Malovskiy

AMERICAN METAL CERICAL LITERATURE CLASSIFICATION

The control of the carbon content of metal welded on with the electric arc. A. N. Shashkov and T. N. Dubava-Artogenova. *Bela* 10, No. 7, 1-13 (1930); *Chem. Zentralbl.* 1940, I, 1558. The loss of C by oxidation in welding with uncoated electrodes is 61-85% and is almost independent of the C content of the electrode. Coatings containing chalk or feldspar (C-rich electrodes) are of value. With thick chalk coatings the C content of the metal welded on is 0.06-0.07%, independently of the C content of the electrode. The ratio: metal C electrode C is 0.10. With feldspar coatings the ratio is 0.59. The surface character of the metal to be welded has an influence, but the electrode angle on welding does not. Increased welding speed decreases the loss of C with uncoated electrodes and is without effect with chalk-coated electrodes. Increasing the current strength increases the C loss with uncoated electrodes and decreases the loss with coated electrodes. A short arc is recommended for uncoated electrodes, a medium-long arc for coated electrodes. H. E. Wirth

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001548710001-4"



Coating for high-chromium steel electrodes. A. N.
Shashkov, *Metallurg. Delo* 1940, No. 3, 10-11. Cf.
U.S. 3,418,011. The following coating for high-Cr steel
electrodes was used to weld satisfactorily stainless, heat-
and acid-resistant steels: marble 37, dolomite 10, fluor-
spar 32, caustic soda 4.5, Fe-Mn (75%) 5.5, Fe-Si (75%)
2, Fe-Ti (20%) 5.5, starch 3.5 and water glass 24%. The
coating should amount to 15% by wt. of the electrode. It
is applied to the electrode and then dried and ignited at
180-200°, forming a firm layer. There are some exptl.
indications that this coating may also be used for elec-
trodes of high-alloy instrument steel. B. Z. K.

APPROVED FOR RELEASE: 08/09/2001

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CA

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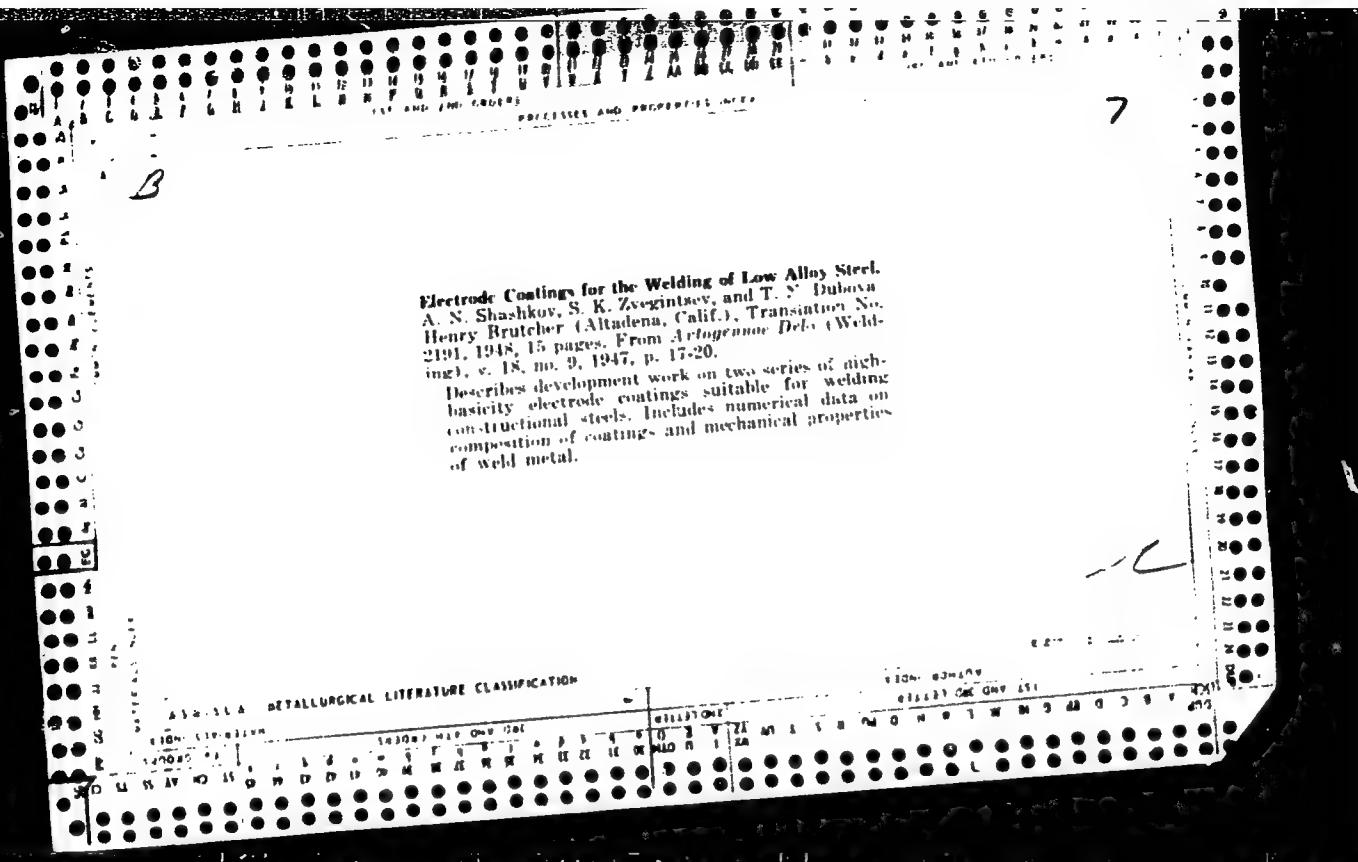
PRECISELY AND CORRECTLY

The weldability of special steels. A. N. Shashik. v. 1 (1941), No. 6, 20-30 (1942), No. 11, 2082. -Russian practices are reviewed, with respect to mech., thermal, metallurgical and technological factors involved in the production of sound and strong structures. Mn is not a deoxidizer in 12 to 14% Cr steels; addition of Si or Ti are necessary. Cooling after welding at 100° to 200° per sec. and annealing is necessary for many

steels. Mn is a necessary constituent for weldable steels. W steels require special handling to prevent cooling cracks. C constructional steels give no trouble. Fine-grained steels are preferred. Special electrodes are necessary for high-strength welds. Welding electrode "E-40" is used commonly and produces welds having a tensile strength of 85,000-95,000 lb. per sq. in. W. A. Mudge

ASW-14 - METALLURGICAL LITERATURE CLASSIFICATION

Principles for regulating the composition of a welding flame. A. N. Shashkov. *Autogenous Welds* 1945, No. 7, U.S. Welding flames are generally divided into 3 kinds: oxidizing, neutral, and carbonizing. For a neutral flame 1 vol. of O₂ is required for each vol. of C₂H₂. Actually 1.1-1.25 vols. of O₂ is used for 1 vol. of C₂H₂. Nor does this ratio correspond to the hottest flame, for which the O₂:C₂H₂ ratio is 1.38. The inaccuracy lies in the term "neutral flame." A really neutral flame exists only if the compn. of the gases corresponds to the equil. curves between the metal and its lower oxide. Under ordinary conditions of welding this equil. is precluded. More correctly, therefore, welding flames should be divided into oxidizing, reducing, and carbonizing. With the flame assumed to be a gaseous phase, an analysis is made of its state and the lower and upper limit of O₂ pressure for a "normal" flame as well as for carbonizing and reducing flames. M. H. h.



SHASHKOV, A. N. Docent

PA 20/49T41

USSR/Engineering
Welding - Electrodes
Testing and Standardization

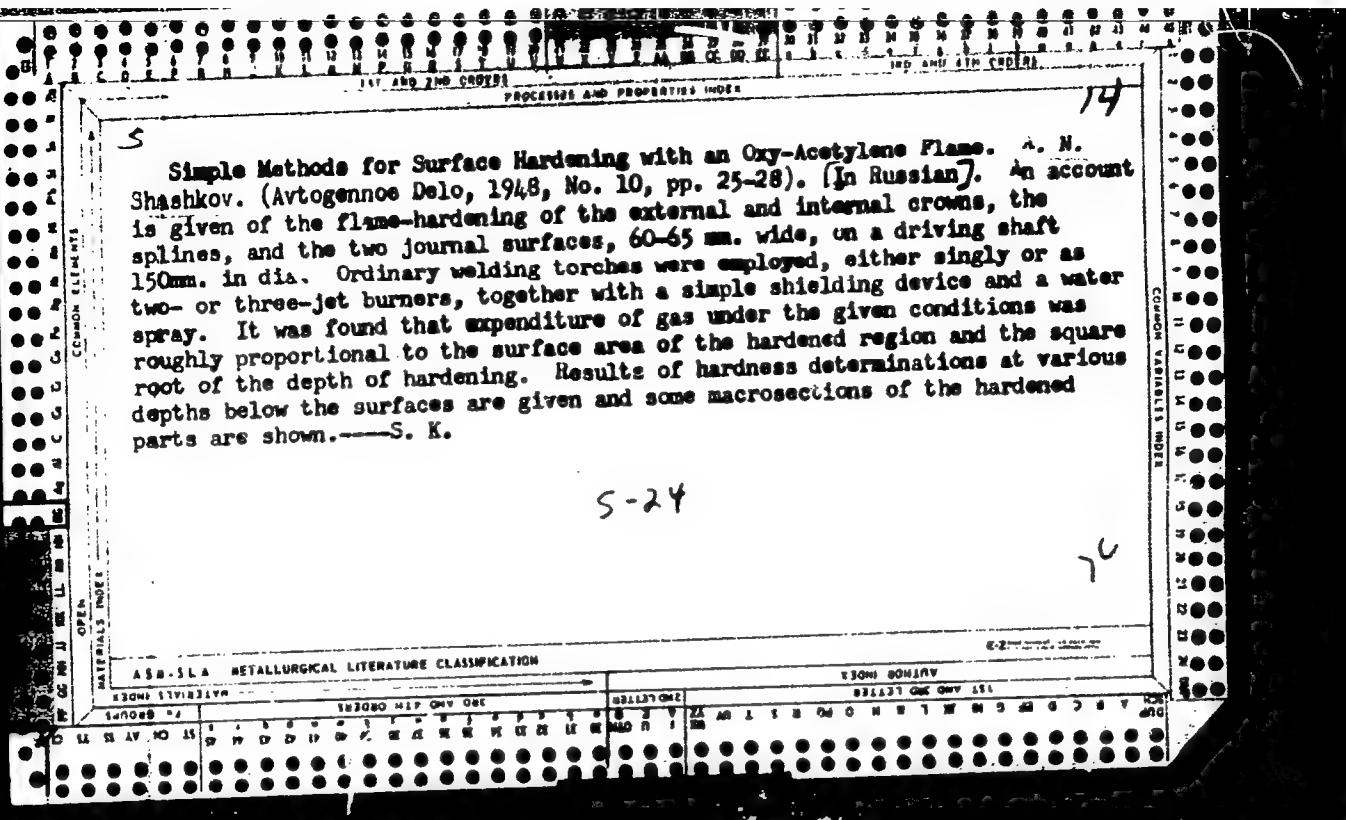
Sep 48

"What Are the Necessary Electrode Grades?" Docent
A. N. Shashkov, All-Union Sci Res Inst of Auto-
genous Welding, 2 $\frac{1}{2}$ PP

"Avtogennye Delo" No 9

Discusses types of electrodes needed for various
purposes and stresses desirability of increased pro-
duction of those in short supply. Includes eight
tables.

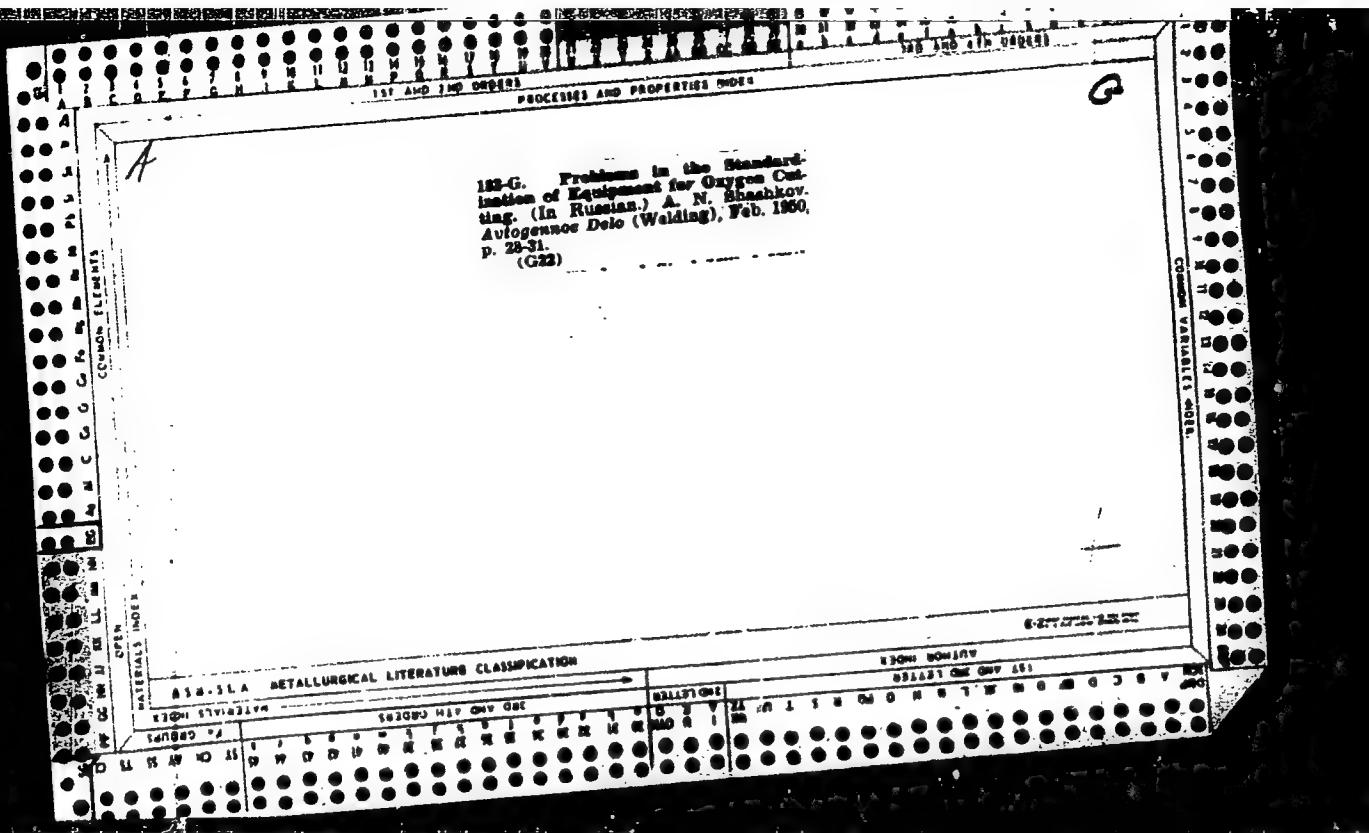
20/49T41

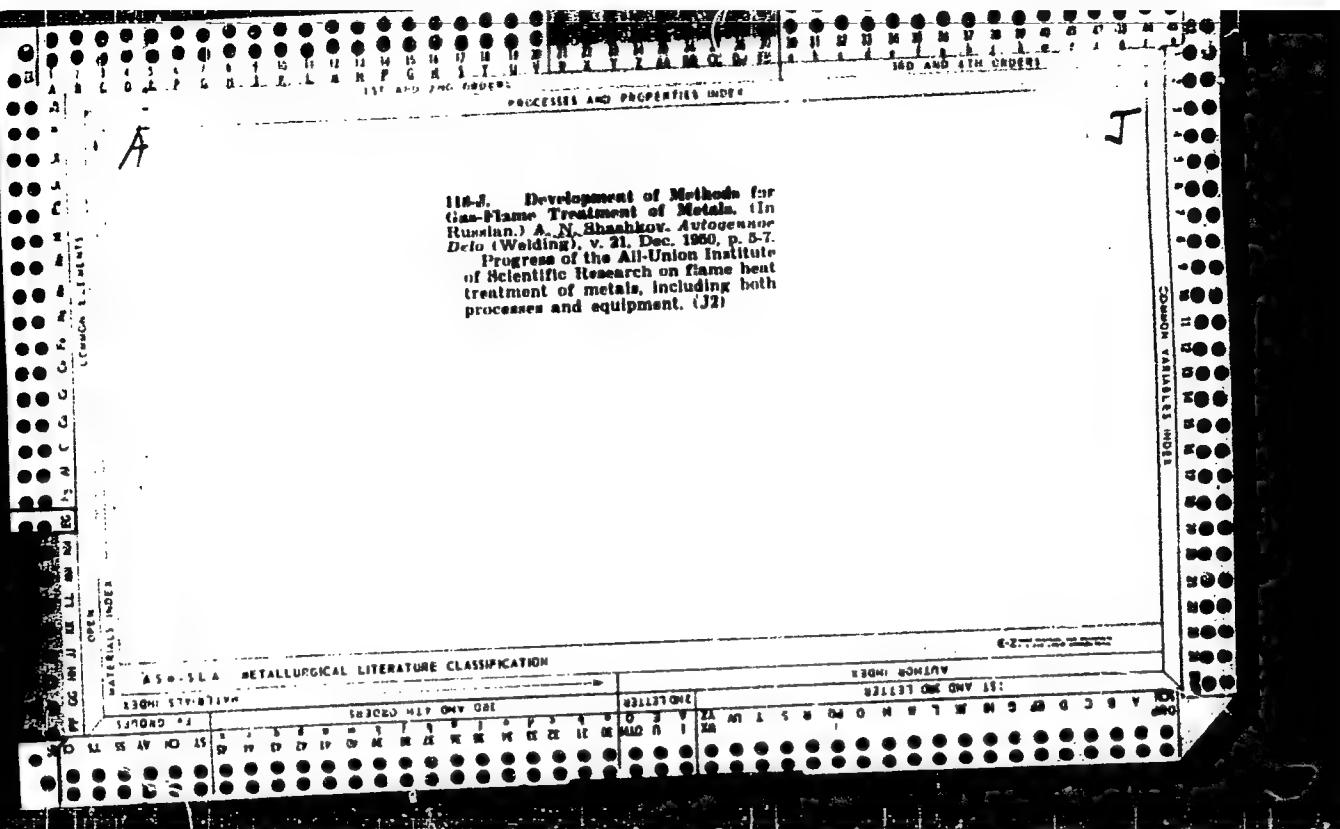


CA

7

Waxing of metallographic microsections. A. N. Shashkov. - *Zarodskaya Lab.*, 14, 1017098. — The section is ground, then polished only partially, and coated with paraffin at 70°-80°. After cooling and mech. removal of the excess paraffin, polishing is completed and the section etched as usual. In cast iron, this procedure reduces oxidation around the graphitic inclusions, gives sharper boundaries of the phosphide eutectic, and purer ferritic fields.





CA

Reasons for standardization of acetylene generators.
A. N. Shabkov. *Aviogazov Dostoy* 21, No. 5, 25 (1950).
A system for standardizing generators is set up based on production rate, method of introduction of carbide and water, operating pressure, and portability. Marshall Siting

SHASHKOV, A. N.

18378

USSR/Metals - Welding, Equipment

Jan 51

"Gas Formation and Its Elimination in Electrode Coatings Containing Ferrosilicon," Docent A. N. Shashkov

"Avtogen Delo" No 1, pp 9-11

Elaborately analyzes causes of gas evolution in process of manufg electrodes. Suggests passivating treatment of ferrosilicon with 7% sol of sodium bichromate to eliminate gas-forming reaction. Method may be used for making even large batches of coating material, to 100 kg, with storage of mixt for several hr.

18378

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SHASHKOV, A.N.

USSR/Engineering - Welding, Equipment Aug 51

"Exposition of New Equipment for Autogenous Welding," A. N. Shashkov

"Avtogen Delo" No 8, pp 28-31

Exposition was arranged in Leningrad by VNIIAvtogen for demonstration of equipment developed during postwar Five-Year Plan, chiefly in 1943 - 1950. Briefly describes some exhibits. Includes 4 photographs.

200T57

USSR/Engineering - Welding, Methods Sep 51

"Nitrogen-Shielded Arc Welding of Copper," Docent
A. N. Shashkov, Laureate of Stalin Prize, Ts. S.
Kromova, Engr., VNIILavtogen

"Avtogen Delo" No 9, pp 4-7

Investigates application of nitrogen as protective medium for arc welding and compares results with those of argon-shielded arc welding. Due to insufficiently high mech properties of welded metal, tested various deoxidizers. Obtained best results by using mixts of charcoal, ferrophosphorous, aluminum power, ferrosilicon

202T33

USSR/Engineering - Welding, Methods Sep 51
(Contd)

and ferromanganese. Substitution of nitrogen for argon proved to be quite possible.

202T33

ASM

376-K. Nitrogen-Arc Welding of Copper. (In Russian.) A. N. Shashkov and Ts. S. Khromova. *Avtogennoe Delo*, v. 22, Sept. 1981, p. 4-7.

✓ The use of nitrogen instead of argon as a protective medium. Results of the two methods are compared in photographs. Data are tabulated and charted. (K1, Cu)

2

CA

Gas evolution and its prevention in electrodes coated with
boronilicon. A. N. Shashkov. *Avangazov Dolo 22*, No.
1, 9-11(1951).—Na₂Cr₇O₄ is proposed as an agent for the
protection of Si and SiO₂ against H₂O to reduce H₂ evolution
in welding.

Marshall Sittig

SHASHKOV, A. N., Docent

PA 233T49

USSR/Metallurgy - Welding, Equipment

Aug 52

"Drying Oxygen Before the Reducing Valve," Docent A. N. Shashkov, Stalin Prize Laureate

"Avtogen Delo" No 8, pp 16-19

Suggests oxygen drying as measure for preventing freezing of reducing valve when gas is used in open-air operations during cold weather season. Drying is realized by connecting special drier to reducing valve on side of high-pressure gas entrance. Blue vitriol and unslaked lime are best drying agents, single charge of which

233T49

provides for drying 30-35 cu m, or 5-6 cylinders of oxygen. Drier proved to be adaptable for continuous consumption of gas at rate of 15 cu m/hr.

233T49

SHASHKOV, A. N. (Docent)

232112

USR/Metallurgy - Flame Cutting, Processes, Equipment Sep 52

"High-Speed Severing Oxygen Cutting," Docent A. N. Shashkov, S. G. Guzov, Engr, Stalin Prize Laureates, VNIIT avtogen (All-Union Sci Res Inst of Welding and Cutting of Metals)

"Avtogen Delo" No 9, pp 1-4

Presents method in which intensification of cutting is achieved by decreasing angle of attack of oxygen stream to 30-45° depending on thickness of metal to be cut. Discusses

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use of special tips with 2 channels for oxygen cutting, resulting in obtaining cuts of quality superior to that produced by ordinary method. Describes PILS-1 portable cutting machine with max speeds in 400-2,150 mm/min range and outlines its application. Tabulates speeds and requirements of oxygen and acetylene for cutting steels 3-30 mm thick.

232112
232112

SHASHKOV, A.N.

Welding

All-Union Scientific Research Institute "Autogenous Welding" in 1947-1951. Avtog.
delo 23 no. 3, 1952. Direktor VNIIAvtogena

52
SO: Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

Оксиген-акрил: 1952,

Oxyacetylene Welding and Cutting

Rapid oxygen-cutting Avtob delo 23 no 9 1952

Monthly List of Russian Accessions, Library of Congress, November, 1952, Unclassified

SHASHKOV, A.N., redaktor.; VEKSER, A.A., redaktor.; YEVDOKIMOVA, Z.N., tekhnicheskiy redaktor.

[Machines for oxygen cutting] Mashiny dlja kislotnoi rezki. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1953. 121 p. (Moscow, Vsesoiuznyi nauchno-issledovatel'skii institut avtogennoi obrabotki metallov. Rukovodящie materialy, no. 1(3)). (MLRA 9:11)
(Gas welding and cutting)

SHASHKOV, A. N.

All-Union Scientific Research Institute on Autogenous Welding
and its work. Trudy VNIIAvtogen no.1:5-21 '53.
(MIRA 12;10)
(Gas welding and cutting)

✓ Ways of Improving the Mechanical Properties of Metal
Melted in Gas Welding. A. N. Shashkov and S. S. Vakerman
(Avog. Dok, 1955, (3), 5-11). [In Russian]. In the investiga-
tion described the properties of deposited metal in the gas-
welding of low-carbon steel were related to the type of filler
rod used and the supplementary treatment to which the
joint had been subjected. —S. K.

Shashkov, A. N.

B. T. R.
Vol. 3 No. 5
May 1954
Welding and Joining

7360* Increasing Impact Strength of Gas Welds. (Russian) A. N. Shashkov, T. S. Khromova, and S. S. Vakman. Vestnik Stroitelskogo Znaniya, v. 63, no. 9, Sept. 1953, p. 81-85. High Mn content in St-steel welding rods was found to increase strength and plasticity of the weld. Tables, micrographs. 3 ref.

SHASHKOV, A. N.

Dissertation: "Alloying Carbon and Silicon With Low-Carbon Steel for Electrodes for Welding Cast Iron." Cand Tech Sci, Moscow Order of Labor Red Banner Higher Technical School imeni N. E. Bauman, 28 Jun 54. (Vechernaya Moskva, Moscow, 18 Jun 54)

SO: SUM 318, 23 Dec 1954

STRIZHEVSKIY, I.I., kandidat khimicheskikh nauk; KOWAL'SKIY, V.A., inzhener;
SHASHKOV, A.N., kandidat tekhnicheskikh nauk, redaktor; MATVEYEVA, L.S.,
redaktor.

[Operation of portable acetylene generators] Ekspluatatsiya perenosnykh
atselilenevykh generatorov. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.
izd-ry, 1955. 71 p. (Rukovodящie materialy po gazoplamennoi obrabotke
metallov, no.8).
(Acetylene generators)

SH-3-17-11-11

EDEL'SON, A.M.; SHASHKOV, A.N., red.; ANTOSHINA, Ye.V., red.; MATVEYEVA,
Ye.N., tekhn. red.; SOKOLOVA, T.F., tekhn. red.

[Operation of apparatuses for metallization] Eksploatatsiya metal-
lizatsionnykh apparatov. Moskva, Gos. nauchno-tekhn. izd-vo mashino-
stroit. lit-ry, 1955. 106 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'-
skii institut avtogennoi obrabotki metallov. Rukovodящие materialy,
no.5). (MIRA 10:11)

(Metal spraying--Equipment and supplies)

SHASHKOV, A.N., kandidat tekhnicheskikh nauk

Agricultural machinery and gas flame machining of metals. Svar. proizv.
no.1:12-14 Ja '55. (MIRA 8:9)

(Agricultural machinery--Repairing) (Oxyacetylene welding and
cutting)

SHASHKOV, A.N.

Formation of cast iron in electrodes with alloying coatings.
Trudy VNIIAvtogen no.3:83-124 '55. (MIRA 11:12)
(Cast iron--Welding) (Electrodes) (Alloys)

Strizhevskiy, A. N.
Chemistry - Acetylene

FD-2528

Pub. 50 - 7/14

Authors : Shashkov, A. N., Strizhevskiy, I. I., Ol'kovskiy, V. F.,
Matveyev, N. N.

Title : Improvement of efficiency and increased automatization in the
operation of acetylene-filling equipment

Periodical : Khim. prom. No 4, 222-227, Jun 1955

Abstract : Describe the design and operation of small units installed at
consumer plants and used for the production from calcium carbide
of dissolved acetylene filled into cylinders. Various improve-
ments in the design and operation of the generator and compressor
are described. Power to the carbide feed is furnished by an en-
gine of the membrane type activated by water or gas (e. g. com-
pressed air). By this means the danger of explosions is reduced.
Four figures, 2 graphs, 5 tables.

Institution : All-Union Scientific Research Institute of the Autogenous
Working of Metals (VNIIAVTOGEN)

SHASHKOV, A.N.

✓ Alloying low-carbon steel electrodes with carbon and silicon for cast iron welding. A. N. Shashkov. Svarocheskoe Proizvodstvo 1935, No. 6, 1-5. Low-carbon rods (4 mm. diam.) were coated with a layer of alloying and a layer of slag-forming material. The former consisted of ferrosilicon (75%), graphite, ferrotitanium, and ferrophosphorus; the latter of marble, dolomite, CaF_2 , and alumium. The slag-forming layer was represented on the SiO_2 - Al_2O_3 - CaO diagram by the area SiO_2 52-55, CaO 35-38, and Al_2O_3 7-10% (varied by the substitution of CaO with 7-10% MgO and the addn. of 8-10% CaF_2). The compn. of the molten metal (formed by a welding arc between 2 electrodes and collected on a cast iron plate) lay between the isotherms 1300-1600° on either side of the eutectic line on the Fe-C-Si diagram and was correlated by the alloying factor $\delta = (C + Si/Al)\%$. A plot of δ_m in the melt vs. δ_e in the alloying coat on the rod passed through a max. of $\delta_m = 5.04$ at $\delta_e = 10.4$. Higher values of δ_e were of no value and occasionally harmful. I. Bencowitz

NINBURG, A.K., kandidat tekhnicheskikh nauk; SHASHKOV, A.N., kandidat tekhnicheskikh nauk, dotsent, redaktor; UVAROVA, A.P., Takhnicheskiy redaktor.

Flame cutting of surfaces. Rukovodящие materialy po gazoplamennoi obrabotke metallov no.6:3-84 '55. (MLR 9:8)
(Gas welding and cutting)

SHASHKOV, A.N., kandidat tekhnicheskikh nauk; GUZOV, S.G., inzhener.

The cutting of very thick steel blanks and billets. Svar.proizv.
no.11:23-26 N '55. (MIRA 9:1)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy obrabotki
metallov.

(Gas welding and cutting)

SHASHKOV, A.N., kandidat mekhanicheskikh nauk, otvetstvennyy redaktor;
UVAROVA, A.F., tekhnicheskii redaktor

[Gas-flame working of metals] Gazoplamennaia obrabotka metallov;
trudy Vsesoiuznoi nauchno-tekhnicheskoi konferentsii. Moskva, Gos.
nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 182 p.(MLRA 9:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy obrabotki
metallov.
(Gas welding and cutting)

137-58-5-9001

Translation from Referativnyy zhurnal, Metallurgiya 1958, Nr 5, p 36 (USSR)

AUTHOR Shashkov A.N.

TITLE A Geometric Method for Selecting Charge Ingredients (Geometricheskiy sposob podbora sostava shikhty)

PERIODICAL V sb. Probl. dugovoy i kontakt elektrosvarki. Kiyev-Moscow, Mashgiz, 1956, pp 211-216

ABSTRACT The geometric method proposed for the selection of composition of charge mixtures is based upon the similarity of right triangles (T). Each pure component is represented by a T in which the one leg is an index of the amount of the component introduced into the mixture, while the other leg is a measure of the resultant content. By assuming the limiting value of the index of content to be a constant it is possible, by means of constructing several T's, to obtain any number of ratios of corresponding sides representing measures of content which would satisfy the condition that their sum be equal to unity or to 100%. The sides representing the amount of a component that has been introduced will indicate the value of the relative amounts introduced, and their sum will be equal to unity or 100%. The author

Card 1/2

137-58-5-9001

A Geometric Method for Selecting Charge Ingredients

describes the design and operation of a device employed in the geometric method of selecting charge components. The following operations may be performed with its aid: a) determination of the composition of a mixture from a given composition of charge; b) selection of a charge according to given contents and mixtures; c) checking on the feasibility of obtaining a certain mixture composition from given ingredients. The charge may be selected with an accuracy of up to 1.0-0.5%. By increasing the dimensions of component T's the accuracy of charge selection can be raised to 0.5-0.3%.

Ye. K.

1. Furnaces--Operation 2. Geometry--Applications

Card 2/2

AID P - 5399

Subject : USSR/Engineering

Card 1/1 Pub. 107a - 1/12

Author : Shashkov, A. N., Kand. of Tech. Sci.

Title : Adding welding cast irons

Periodical : Svar. proizv. 10, 1-5, 0 1956

Abstract : The author discusses the composition and graphitization of two typical additional cast irons (GOST 2671-44) used for welding of cast iron. The field of application, the microstructures and the grading of welding cast irons, as well as the current cast iron shop practice are discussed. Two tables, 8 graphs, 1 photo with 8 micro-pictures, a GOST standard; 6 Russian references (1935-55).

Institution : All Union Scientific Research Institute of the Autogenous Treatment of Metals (VNIIAvtogen).

Submitted : No date

SHASHKOV, A.N.

ANTONOV, I.A., kand.tekhn.nauk; ANTOSHIN, Ye.V., inzh.; ASINOVSKAYA, G.A., inzh.; VASIL'YEV, K.V., kand.tekhn.nauk; GUZOV, S.G., inzh.; DEYKUN, V.K., inzh.; ZAYTSEVA, V.P., inzh.; KAZHEKOV, P.P., inzh.; KARAN, Yu.B., inzh.; KOLTUNOV, P.S., kand.tekhn.nauk; KOROVIN, A.I., inzh.; KRZHECHKOVSKIY, A.K., inzh.; KUZNETSOVA, Ye.I., inzh.; MATVEYEV, N.N., tekhnik; MOROZOV, M.Ye., inzh.; NEKRASOV, Yu.I., inzh.; NECHAYEV, V.D., kand.tekhn.nauk; NINEBURG, A.K., kand.tekhn.nauk; SPEKTOR, O.Sh., inzh.; STRIZHEVSKIY, I.I., kand.khim.nauk; TFSMENITSKIY, D.I., inzh.; KHROMOVA, TS.S., inzh.; TSEUNEL', A.K., Inzh.; SHASHKOV, A.N., kand. tekhn.nauk, dots.; SHELECHNIK, M.M., inzh.; SHUKHMAM, D.Ya., inzh.; EDEL'SON, A.M., inzh.; VOLODIN, V.A., red.; UVAROVA, A.F., tekhn.red.

[Machines and apparatuses designed by the All-Union Institute of Autogenous Working of Metals] Mashiny i apparty konstruktsii VNIIAvtogen. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroitel'noi lit-ry, 1957. 173 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut avtogennoi obrabotki metallov, no.9)

(Gas welding and cutting--Equipment and supplies)

SHASHKOV, A.N., kand.tekhn.nauk

Flame metal working during 40 years. Svar.proizv.no.11:35-38
N '57. (MIRA 10:12)
(Gas welding and cutting) (Metal spraying)

NINBURG, A.K.,kand.tekhn.nauk; SHASHKOV, A.N.,kand.tekhn.nauk,red.;
GRUSHEVSKAYA, G.M.,red.izd-va; SHIGIM, S.T.,tekhn.red.

[Using substitute gases for acetylene in flame machining of
metals] Ispol'zovanie gazov-zamenitelei atsetilena pri gazopla-
mennoi obrabotke metallov. Moskva, Gos. nauchno-tekhn. izd-vo
mashinostroitel'noi lit-ry. 1958. 56 p. (Spravochnye materialy
po gazoplamennoi obrabotke metallov. No.11) (MIRA 12:5)
(Gas welding and cutting--Equipment and supplies)

ANTOSHIN, Ye.V., inzh.; SHASHKOV, A.N., kand.tekhn.nauk, red.; UVAROVA, A.F.,
tekhn.red.

[Metal coatings by gas flame spraying] Nanesenie pokrytii sposobom
gazoplamenного нанесения. Moskva, Gos.nauchno-tekhn.izd-vo
mashinostroit. lit-ry, 1958. 82 p. (Spravochnye materialy po
gazoplamennoi obrabotke metallov, no.15) (MIREA 12:1)
(Metal spraying) (Gas torches)

PHASE I BOOK EXPLOITATION

SOV/2227

5(0)

Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy obrabotki
metallov

Proizvodstvo atsetilena dlya gazoplamennoy obrabotki metallov (Pro-
duction of Acetylene for Flamespraying Metals) Moscow, Mashgiz,
1958. 87 p. (Series: Spravochnyye materialy po gazoplamennoy
obrabotke metallov, vyp. 14) Errata slip inserted. 7,000 copies
printed.

Comps.: I.I. Strizhevskiy, Candidate of Chemical Sciences and S.G.
Guzov, Engineer; Eds.: A.N. Shashkov, Candidate of Technical
Sciences and V.A. Koval'skiy, Engineer; Tech. Ed.: A.Ya. Tikhonov;
Managing Ed. for Literature on Heavy Machine Building (Mashgiz):
S.Ya. Golovin, Engineer.

PURPOSE: This book is intended for persons engaged in the production
of acetylene for the purpose of flamespraying metals.

Card 1/5

. Production of Acetylene (Cont.)

SOV/2227

COVERAGE: The book provides a systematic discussion of the structure of equipment used in acetylene production and their arrangement in installations which prepare and use acetylene to flame-spray metals. Rules for servicing equipment, production control and industrial safety measures are also discussed. The book, *Obshchaya instruktsiya po proizvodstvu atsetilena* (General Instructions for Acetylene Production), published in 1952, served as a basis for reference materials. Rules for the location and construction of acetylene installations and the distribution of equipment are given in accordance with the Giprokislorod (State Institute for the Design and Planning of Oxygen Installations) under the Ministry of the Chemical Industry. No personalities are given. There are no references.

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SOV/2227

Production of Acetylene (Cont.)

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Production of Acetylene (Cont.)

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Supplement 12. Standard specifications for the construction of an
acetylene installation

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86

AVAILABLE: Library of Congress

Card 5/5

Tm/bg
8-17-59

SOV-135-58-9-3/20

AUTHOR: Shashkov, A.N., Candidate of Technical Sciences

TITLE: On the Welding of Plastics (K vyproudu svarke plastmass)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 9, pp 6-9 (USSR)

ABSTRACT: The article contains general information on the technology of welding plastics and equipment used for this purpose. Information includes description of the "GCP-1-56" welding torch designed by VNIIAvtogen according to experimental investigations carried out by engineer I.A. Nemkovskiy. The torch was developed on the basis of the "GSM" welding torch, to which a special tip was added to be used with acetylene and hydrogen. It proved satisfactory in practical use and is now being produced at the 1st Moscow Autogen Plant. Information includes technical characteristics of the torch. There are 2 tables, 1 scheme, 1 graph, 4 diagrams and 2 photos.

ASSOCIATION: VNIIAvtogen
1. Plastics--Welding 2. Plastics--Bonding

Card 1/1

SHASHKOV, A.N., kand.tekhn.nauk, red.; BELAYA, K.A., red.; TYURIN, V.I., tekhn.red.

[Machines and equipment for the flame machining of metals; catalog] Mashiny i apparatura dlia gazoplamennoi obrabotki metallov; katalog. Moskva, Tsentr.in-t nauchno-tekhn.informatsii mashinostroeniia, 1959. 137 p. (MIRA 13:11)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy obrabotki metallov.
(Gas welding and cutting)

BDAL'SOV, A.M.; SHASHKOV, A.U., kand.tekhn.nauk. red.; ANTOSHIN, Ye.V., inzh., red.; STEPANCHENKO, N.S., red.izd-va; SOKOLOV, T.F., tekhn. red.

[Operating metallization equipment] Eksploatatsiya metallizatsionnykh apparatov. Moskva, Gos. nauchn.-tekhn. izd-vo mashinostroit. lit-ry, 1959. 159 p. (Spravochnye materialy po gazoplamennoi obrabotke metallov, no.16).

(MIRA 12:4)

(Metal spraying)

25(1)

SOV/135-59-5-1/21

AUTHOR: Shashkov, A. N., Candidate of Technical Sciences, Director
TITLE: Gas Welding and Cutting From 1959 to 1965
PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 5, pp 1-4 (USSR)
ABSTRACT: The development of gas welding and cutting during the 1959-1965 7-year plan is to proceed on the basis of the following: the control figures for the development of the national economy of the USSR contained in Khrushchev's report; the resolution of the Party and Government on the introduction of welding technique into production, given in issue Nr 11, 1958, of this journal; data on the tempo and trends of its development in previous years, and scientific and technical progress, which enable future progress to be evaluated. According to the control figures for the 7-year plan affecting the development of gas welding and cutting, the output of production means is to rise 85-88%, steel production from 55 million tons in 1958 to 86-91 million tons in 1965, machine construction as a whole, including gas welding and cutting equipment, is to almost double, i.e., an average yearly increase of 10-15%. Table 1 illustrates the growth of the output of autogenous

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SOV/135-59-5-1/21

Gas Welding and Cutting From 1959 to 1965

equipment from 1940 to 1958 from 100 to 1620 (in %). It is shown in Table 2 how the gas welding and cutting process is being extended to non-metallic products such as plastic and ceramics. The output of oxygen and gaseous fuels is to be tripled to meet the demands of future equipment with an hourly consumption of up to 3000 cubic metres of production of oxygen; mechanization and automation means is to rise by 3.85 times and that of non-mechanized equipment by 40-100%. In 1965, about a third of the acetylene used will be obtained from natural gas. Yu. V. Dalago submitted a method of storing and transporting acetylene at low temperatures. Acetylene balloons in the future will have a capacity of 8-9 kgms. Twenty-two central acetylene producing stations with an output of 150-300 cubic metres per hour are to be constructed; in 1965 they will have tripled the total production capacity of solute acetylene. New kinds of non-evaporative torches will increase the consumption of liquid fuels (benzine and kerosene), now comprising 50-60% in weight of the consumption of acetylene. The quantity of natural and petroleum

Card 2/3

SOV/135-59-5-1/21

Gas Welding and Cutting From 1959 to 1965

gases and propane-butane reduced mixtures for gas welding and cutting in 1965 is to constitute about a third of the acetylene that would be required. Rocket-type torches, flameless combustion torches and explosive-action equipment is to be used. The basic technological processes of gas welding and cutting are described and shown in Figure 2. Photo-electronic copying devices and fully automatic machines are to be introduced. Gas-electric, in particular gas-arc cutting will be developed rapidly and equipment for oxygen cutting with electric heating should be produced. The lack of filler metals and powdered and volatile fluxes is to be remedied. Hardening with gas-flame heating and the wide use of gas-substitutes will be employed. Application of plastic, heat-resistant, infusible and other coatings will be developed. There are three tables and one graph.

ASSOCIATION: VNIIAFEGEN

Card 3/3

SOV/135-59-11-1/26

13(2,3,4)

AUTHORS: Shashkov, A.N., Candidate of Technical Sciences, and Voshchanov, K.P., Engineer

TITLE: The Practice of the Central Experimental Welding Shops of VNIIAV-AVTOGEN in the Light of the Decisions of the June Plenum of the Central Committee of the C.P.S.U.

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 11, pp 1-3 (USSR)

ABSTRACT: At the June Plenum of the Central Committee of the C.P.S.U., N.S. Khrushchev emphasized the need for organizing special welding plants disposing of highly qualified experts and modern equipment. The large enterprises can fulfill any kind of welding jobs. However, it would be inexpedient to provide with a complete welding equipment all machine-building plants, where the volume of welding is small. Since 1930, the Central Experimental Welding Shops of VNII-AVTOGEN of the Mosgorsovnaikhoz have performed various welding jobs, and of late, they also carry out the gas-flame machining of metals. The jobs performed by these shops can be divided into 4 principal groups: 1) Performing of complex and responsible welding

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SOV/135-59-11-1/26

The Practice of the Central Experimental Welding Shops of VNIIAVTOGEN in the Light of the Decisions of the June Plenum of the Central Committee of the C.P.S.U.

jobs such as repairing worn-out crank shafts of powerful stationary diesel engines, or welding 10,000-ton hydraulic press components. In the course of a year, the Central Shops serve, on the average, 350-400 enterprises. All basic methods of welding used in industry are applied. The Shops are well equipped with various welding materials, such as filler metals, fluxes, electrodes, etc., and dispose of a modern welding equipment: 2) Assistance rendered by the Shops to other enterprises when special methods of metal welding and cutting are needed; 3) Metal spraying and surfacing by plastics. These processes are widely used in the radio and electrical industry; 4) Setting in operation and adjusting new equipment such as acetylene stations, gas-cutting automatic machines, equipment for special steels cutting, installations for metal spraying and surfacing by plastics, argon arc welding, gas welding of non-ferrous metals with application of gaseous flux BM-1, and low temperature welding of cast iron. In the course of a year, 70-120 different enterprises are served in this field by the Shops. It is planned to organize a special welding plant along the following

Card 2/3

SOV/135-59-11-1/26

The Practice of the Central Experimental Welding Shops of VNIIAVTOGEN in the Light of the Decisions of the June Plenum of the Central Committee of the C.P.S.U.

lines: It should consist of two departments: procurement-mechanical and assembling-welding. The first department should be equipped with all sorts of metal-cutting machines, such as lathes, drilling, milling and shaping machines, metal cutting shears, etc., for preparing the work pieces to be welded and for their subsequent machining after the welding. The second department should be provided with modern equipment permitting performance of all kinds of welding, such as arc welding, gas-electric welding, contact welding, etc.; it should be also equipped with installations for automatic surfacing by plastics. A special section should be organized for carrying out jobs at other plants when the units to be repaired cannot be dismantled and delivered to the welding plant. For this purpose, transportable electro-welding assemblies and other appliances for automatic welding and oxygen cutting should be available.

Card 3/3

SHAPIRO, Il'ya Samuilovich; SHASHKOV, A.N., kand.tekhn.nauk, red.;
SOBOLEVA, G.N., red.izd-va; SMIRNOVA, G.V., tekhn.red.

[Air-arc cutting of metals] Vozdushno-dugovaya rezka metallov.
Pod red. A.N.Shashkova. Moskva, Gos.nauchno-tekhn.izd-vo mashino-
stroit.lit-ry, 1960. 42 p. (Bibliotekha avtogenshchika, no.3).
(MIRA 13:7)

(Electric metal cutting)

EERL'SON, A.M.; SHASHKOV, A.N., kand.tekhn.nauk, red.; SOBOLEVA, G.N.,
red.izd-va; SMIRNOVA, G.V., tekhn.red.

[Use of metallizing for the reconditioning of worn machine
parts] Primenenie metallizatsii dlia vosstanovleniya izno-
shennykh detalei mashin. Pod red. A.N.Shashkova. Moskva, Gos.
nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 71 p.
(Bibliotekha avtogenchika, no.2). (MIRA 14:3)

(Machinery--Maintenance and repair)
(Metal spraying)

KOROVIN, A.I.; SHASHKOV, A.N., kand.tekhn.nauk, red.; SOBOLEVA, G.N.,
red.izd-va; SMIRNOVA, G.V., tekhn.red.

[Flame process of surface hardening] Gazoplamennaja poverkhnostnaja
zakalka. Pod red. A.N.Shashkova. Moskva, Gos.nauchno-tekhn.izd-ve
mashinostroit.lit-ry, 1960. 79 p. (Bibliotekha avtogenashchika,
no.1). (MIRA 14:3)

(Flame hardening)

KULAGIN, Ivan Dmitriyevich, kand.tekhn.nauk; SHASHKOV, Andrey Nikolaevich, kand.tekhn.nauk; UMNYAGIN, Mikhail Grigor'yevich

Specialists answer questions about welding. Tekh. mol. 28
no. 12:7-10 '60. (MIRA 13:12)

1. Institut metallurgii imeni A.A.Baykova AN SSSR. (for Kulagin).
2. Direktor Vsesoyuznogo nauchno-issledovatel'skogo instituta
avtogennoy obrabotki metallov (for Shashkov). 3. Direktor
Vsesoyuznogo proektno-tehnologicheskogo instituta tyazhelogo
mashinostroyeniya (for Umnyagin).
(Welding)

SOTSKOV, N.S., doktor tekhn.nauk, prof.; VOROB'YEVA, T.M.; kand.tekhn. nauk; CHUDNOVSKIY, A.I., doktor fiz.-mat.nauk, prof.; KAGANOV, M.A., kand.fiz.-mat.nauk.

Review of I.F.Volshin, A.S.Kasperovich, and A.G.Shashkov's book "Semiconductor thermistors," Inzh.-fiz.zhur. no.1:124-126 Ja '60, (MIRA 17:4)

(Thermistors) (Voloskin, I.F.)
(Kasperovich, A.S.) (Shashkov, A.G.)

STRIZHEVSKIY, I.I., kand.khim.nauk; KOVAL'SKIY, V.A., inzh.; SHASHKOV, A.N., kand.tekhn.nauk, red.; STEPANCHENKO, N.S., red.izd-va; UVAROVA, A.F., tekhn.red.

[Handling and operation of portable acetylene generators]
Eksploatatsiya perenosnykh stetsilenovykh generatorov. Izd.2., perer. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1960. 78 p. (Spravochnye materialy, no.18).

(MIRA 13:?)

I. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy obrabotki metallov.
(Acetylene generators)

ASINOVSKAYA, Gnesya Abramovna; ZELIKOVSKAYA, Nataliya Mikhaylovna;
SHSHKOV, A.N., kand.tekhn.nauk, red.; SOBOLEVA, G.N., red.izd-va;
SMIRNOVA, O.V., tekhn.red.

[Gas welding of brass and its deposition on ferrous metals]
Gazovaisa svarka latuni i naplavka ee na chernye metally. Pod red.
A.N.Shashkova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.
Lit-ry, 1960. 102 p. (Bibliotekha avtogenashchika, no.4/5)
(MIRA 14:3)

(Brass--Welding) (Gas welding and cutting)
(Hard facing)

TROFIMOV, Aleksandr Alekseyevich; SHASHKOV, A.N., kand.tekhn.nauk, red.;
SOBOLEVA, G.N., red.izd-va; SMIRNOVA, G.V., tekhn.red.

[Mechanized oxygen cutting] Mekhanizirovannia kislorodnai rezka. Pod red. A.N.Shashkova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1961. 90 p. (Bibliotekha avtogenshchika, no.6)

(MIRA 14:6)

(Gas welding and cutting)

SHASHKOV, A.N., kand.tekhn.nauk, ASINOVSKAYA, G.A., inzh.; DOBKINA, Ye.N.,
inzh.

Investigating and developing a self-fluxing filler metal for
brass welding. Trudy VNIIAvtogen no.8:37-54 '62. (MIRA 15:6)
(Brass-Welding)

TSYGANOV, M.A., inzh.; TITOV, A.S., inzh.; SHASHKOV, A.N., kand.tekhn.nauk

Consultations on readers' questions. Svar. proizv. no.8:48 Ag
'62. (MIRA 15:11)

1. Otdel okhrany truda TSentral'nogo komiteta professional'nogo
soyuza rabochikh mashinostroyeniya (for TSyganov). 2. Glavnoye
upravleniye srednikh spetsial'nykh uchebnykh zavedeniy (for Titov).
3. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy
obrabotki metallov (for Shashkov).
(Welding)

SHASHKOV, A. N., kand. tekhn. nauk

Cutting centers point the way toward the automation of the ~~gas~~
cutting of metals. Avtom. svar. 15 no.11:84-87 N '62.
(MIRA 15:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy
obrabotki metallov.

(Gas welding and cutting)

NEKRASOV, Yu. I.; SHASHKOV, A. N., kand.tekhn. nauk; SOBOLEVA,
G.N., red.izd-va; GORDEYEVA, L.P., tekhn. red.

[Welding metals with the use of liquid fuel] Svarka metal-
lov s ispol'zovaniem zhidkogo goriuchego. Pod red. A.N.Shash-
kova. Moskva, Mashgiz, 1963. 85 p. (Bibliotechka avtogen-
shchika, no.7) (MIRA 16:7)
(Gas welding and cutting)

SPEKTOR, O.Sh.; SHASHKOV, A.N., kand. tekhn.nauk, red.; SOBOLEVA, G.N., red.izd-va; GORDEYEVA, L.P., tekhn. red.

[Through and skin oxygen cutting under flux] Razdelitel'naja i poverkhnostnaia kisloredno-fliusovaia rezka. Moskva, Mashgiz, 1963. 93 p. (Bibliotekha avtogenashchika, no.8) (MIRA 16:8)

(Gas welding and cutting)

e

KOVAL'SKIY, V.A.; OFITSEROV, D.M.; SHASHKOV, A.N., kand. tekhn.
nauk, red.

[Handbook on portable acetylene generators] Rukovodstvo
po perenosnym atsetilenovym generatoram. Moskva, Mashgiz,
1963. 114 p. (Bibliotekha avtogenchika, no.10)
(MIRA 17:4)

ASINOVSKAYA, G.A.; SHASHKOV, A.N., kand. tekhn. nauk, red.;
SOBOLEV, G.N., red. izd-va; GORDEYEVA, L.P., tekhn.
red.

[Gas welding of metals] Gazoplamennaya paika metallov. Pod
red. L.N. Shashkova. Moskva, Mashgiz, 1963. 124 p. (Biblio-
techka avtogenchika, no.9) (MIRA 16:7)
(Gas welding and cutting)

SHASHKOV, A.N., kand.tekhn.nauk; BERG, T.V., inzh.

Consultations in answer to letters from readers. Svar.proizv.
no.1:48 Ja '63. (MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy
obrabotki metallov (for Shashkov). 2. Moskovskiy optychnyy
svarochnyy zavod (for Berg).
(Gas welding and cutting)

BYKOV, V.V.; SHASHKOV, A.N., kand. tekhn. nauk, red.

[Equipment for gas welding and cutting; operation main-
tenance and repair] Apparatura dlia gazovoi svarki i
rezki; ekspluatatsiia, obsluzhivanie i remont. Moskva,
Izd-vo "Mashinostroenie," 1964. 135 p. (Bibliotekha
avtogenchchika, no.11-12) (MIA 17:7)

SHASHKOV, A.N., kand. tekhn. nauk; ASINOVSKAYA, G.A., inzh.; SPEKTOR, O.Sh.,
inzh.

Investigating the nature and conditions of the change in the chemical
composition of structural steel at the surface of the cut. Trudy
VNIITsR (ed.) no.10:3-26 '64.
(MIRA 17:10)

SHASHKOV, Aleksey Ivanovich

Ways of expanding flame machining. (Trudy) LMZ no. 11:29-38 1964.
(MIRA 17:12)

ARTYUKHOVSKAYA, S.A.; TESMENITSKIY, D.I.; ASINOVSKAYA, G.A.; BOYKO, M.I.;
KOLTUNOV, P.S.; NEKRASOV, Yu.L.; KOROVIN, A.I.; NECHAYEV, V.D.;
NINBURG, A.K.; SHASHKOV, A.N.; EDEL'SON, A.M.; ANTONOV, I.A.,
kand. tekhn. nauk, red.

[Using acetylene substitute gases for flame metalworking.]
Primenenie gazov-zamenitelei atsetilena pri gazoplamennoi
obrabotke metallov. Moskva, Mashinostroenie, 1964. 150p.
(Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut avto-
gennoi obrabotke metallov. Spravochnye materialy po gazopla-
mennoi obrabotke metallov, no.23). (MIFA 17:9)

SHASHKOV, A.N., kand.techn.sciak; MEL'NICHENKO, N.T., inzh.; KIRGIREV, N.I., inzh.

Consultations on questions asked in our readers' letters. Sver.proizv.
no.10:48 O '64. (MIRA 18:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogennoy obrabotki
metallov (for Shashkov),

SHASHKOV, A. N.; SPKTOV, O. CH.; ASIMOVSKAYA, G. A.

"Influence of thermal cutting under metal on section borders"

paper presented at 16th Annual Assembly, Intl Inst of Welding, Paris, 5-10 Jul 1965.

SPASHEKOV, A.M., kand. tekhn. nauk; NEFESOV, Yu.I., inzh.; VAKSMAN, S.S.,
et al.

Coated wire for steel welding with a propane-butane-oxygen
flame. Svar. protiv. no.10/26-28 0 165. (MIRA 18:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut avtogenного
magnitostroyeniya.

L 7894-66 EWT(m)/EPF(c)/EWP(j)/EWA(c) RM

ACC NR: AP5024966

SOURCE CODE: UR/0286/65/000/016/0030/0030

AUTHORS: Shashkov, A. N.; Tesmelitskiy, D. I.; Ofitserov, D. M.; Zakharova, N. I.

ORG: none

TITLE: Method for obtaining acetylene. Class 12, No. 173748 [announced by All-Union Scientific Research Institute for Autogenous Machine Building (Vsesoyuznyy nauchno-issledovatel'skiy institut avtogenного mashinostroyeniya)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 30

TOPIC TAGS: acetylene, calcium carbide, isoamyl alcohol, kerosene

ABSTRACT: This Author Certificate presents a method for obtaining acetylene in high pressure gas generators by interacting calcium carbide with hot water. To prevent explosion hazards, the reaction is carried out at temperatures not exceeding 40C in an inert medium such as kerosene. Antifoaming agents such as isoamyl alcohol are added to the inert medium.

SUB CODE: 07/ SUBM DATE: 16Oct64

^{new}
Card 1/1

UDC: 662.766.3

2

Extractions of organic compounds by the method of exoclectron emission.

Study of catalyst by the method of exoclectron emission.
Thesis, Moscow, 35 pp. (2657-2660) N 61. (MIRA 14:12)

I. I. Skrynnik (Moscow State University imeni Lomonosova,
(Catalyst)
(Electrons)

24.3500

S/051/62/012/005/015/021
E075/E136

AUTHORS: Krylova, I.V., Shashkov, A.S., and Kobozev, N.I.

TITLE: Investigation of crystallophosphors ZnS.Cu by the
method of exoelectronic emission

PERIODICAL: Optika i spektroskopiya, v.12, no.5, 1962, 635-636

TEXT: A study was made of the influence of additions of Cu on the intensity of luminescence, exoelectronic emission and catalytic activity of ZnS. The phosphor samples were prepared from melt by heating in air at 800 °C. The emission was excited by X-rays and luminescence by ultraviolet light. Catalytic activity of the samples was measured by the decomposition of methanol between 300-350 °C. It was shown that non-activated ZnS gives comparatively weak emission. Small additions of Cu (7.5×10^{-6} and 7.5×10^{-4} g/g ZnS) give sharp emission maxima at 140 and 260 °C. The latter maxima were shown to correspond to maxima of catalytic activity at 330 °C. Thus the experiments demonstrated that the luminescence centres have a connection with the catalytic centres and exoelectronic emission, and that the

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S/189/63/000/001/004/008
D204/D307

AUTHORS: Shashkov, A. S., Krylova, I. V. and Kobozev, N. I.

TITLE: A study of the sintering of silver black by exoelectronic emission

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 1, 1963, 18-22

TEXT: The aim of the present work was the study of catalytic and emissive properties of silver black in dependence on temperature and previous thermal treatment. Ag black was obtained by the reduction of A_5NO_3 with ammoniacal hydrazine sulfate at $0^{\circ}C$, and was fired in H_2 in the temperature range $50 - 650^{\circ}C$. The catalytic activity was assessed by the decomposition reaction of H_2O_2 , at 20, 30 and $40^{\circ}C$; the energies of activation corresponding to variously pre-treated Ag catalysts were also measured. The catalytic activity of Ag black was found to decrease as the firing temperature was raised to $\sim 250^{\circ}C$, remained constant for firing temperatures

Car 1/5

A study of the sintering ...

S/189/63/000/001/004/008
D204/D307

of $\sim 250^{\circ}\text{C}$ to 550°C , and fell sharply in specimens fired at higher temperatures. The energies of activation were respectively ~ 5500 cal/mole and ~ 7000 cal/mole for specimens fired at $50 - 250^{\circ}\text{C}$ and $250 - 600^{\circ}\text{C}$. The exoelectronic emission increased slightly between 50 and 250°C , (for specimens fired at 200 and 250°C), and increased further between 250 and 550°C , the sharpest emission peak appearing at 550°C . The emission fell sharply at higher temperatures. Measurements of magnetic susceptibility on catalysts fired at different temperatures showed also that increased emissivity is connected with reduced diamagnetism. It is suggested that at low temperatures the catalysts contain a high proportion of an amorphous, chemically active atomic phase covering the crystals. After firing and exposure to air, a surface film of AG_2O is formed. The surface concentration of this active phase is reduced after firing to $50 - 250^{\circ}\text{C}$, whilst catalysts fired at $300 - 500^{\circ}\text{C}$ possess a finely crystalline surface with a small proportion of the atomic phase. The crystals become coarser at 550°C , decreasing the specific surface of the catalyst. There are 5 figures.

Card 2/3

A study of the sintering ...

S/189/63/000,001/004/008
D204/D307

ASSOCIATION: Kafedra fizicheskoy khimii (Physical Chemistry Department)

SUBMITTED: February 12, 1962

Card 3/3

L 18321-63

EPF(c)/EWT(1)/EWT(m)/BDS/ES(w)-2 AFFTC/ASD/ESD-3/IJP(C)/

SSD Pr-4/Pab-4 RM/WW
ACCESSION NR: AP3004982

S/0076/63/037/008/1851/1854 74

23

AUTHORS: Shaskov, A. S.; Krylova, I. V.; Kobozev, N. I.TITLE: Study of adsorption catalysts by exoelectronic emission

SOURCE: Zhurnal fiz. khimii, v. 37, no. 8, 1963, 1851-1854

TOPIC TAGS: adsorption catalyst, catalyst, exoelectronic emission, platinum, hydrogen peroxide, barium sulphate

ABSTRACT: Authors studied a series of catalysts of Pt/BaSO_4 type with a varied platinum content. The reflecting properties and magnetic susceptibility of the catalysts were studied in addition to the catalytic and emissive properties. Small additions of platinum result in intense activation of the exoelectronic emission with BaSO_4 . They are catalytically inactive in the decomposition of hydrogen peroxide. Appearance of catalytic activity in the platinum coincides with the region of exoelectronic emission decrease and light reflection from the carrier. Analysis of magnetic susceptibility showed that catalysts with a small platinum content are paramagnets and those with a platinum concentration of 0.0018 to 0.0036 g/g BaSO_4 are diamagnets. Authors conclude that these results confirm the mechanism found earlier during the investigation of the luminescent

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properties of adsorption catalysts. Orig. art. has: 5 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet M. V. Lomonosova (Moscow
state university) Khimicheskiy fakul'tet (Chemical faculty)

SUBMITTED: 20Sep62

DATE ACQ: 06Sep63

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SUB CODE: PH, CH

NO REF Sov: 004

OTHER: 003

2/2
Card

KOBOTSEV, N. I.; KRYLOVA, I. V.; SHASHIKOV, A. S.

"The effect of electron properties of support upon exoelectron emission and catalysis."

report submitted to 3rd Intl Cong on Catalysis, Amsterdam, 20-25 Jul 64.

Moscow State Univ im Lomonosov.

SHASHKOV, A.S.; KRYLOVA, I.V.

Decomposition of hydrogen peroxide on copper catalysts. Vest.
Mosk. un. Ser. 2:Khim. 20 no. 5:37-41 S-0 '65. (MIRA 18:12)

1. Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo
universiteta. Submitted Sept. 7, 1964.

ACC NR: AP7002863

(N)

SOURCE CODE: UR/0149/66/000/006/0110/0115

AUTHOR: Novikov, I. I.; Shashkov, D. P.

ORG: Department of Metal Science of Non-Ferrous, Rare and Radioactive Metals, Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov. Kafedra metallo-tsvetnykh, redkikh i radioaktivnykh metallov)
TITLE: The inherent and the impurity brittleness of metallic compounds

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 6, 1966, 110-115

TOPIC TAGS: metal compound, single crystal compound, polycrystal compound, ~~metal~~
~~brittleness, brittleness-ductility transition, INTERMETALLIC COMPOUND,~~
~~PHASE TRANSITION~~

ABSTRACT: In a general case, it can be assumed that metallic and intermetallic compounds have inherent and volume and boundary impurity brittleness. Experimental data show that gas impurity segregations along grain boundaries, which cause the boundary impurity brittleness, play an exceptionally important role in the brittle failure of compounds. To determine the nature of the brittle-to-plastic transition of metallic compounds without boundary impurity brittleness, high-purity single crystal and polycrystal (the latter obtained by the levitation melting of the former) iron, cobalt, nickel and manganese silicides were subjected to tension and bend tests and electric conductivity measurements at temperatures up to 800C. The transition of the polycrystalline compounds through the temperature threshold of the impurity brittleness with heating was found to be associated with desorption of the

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UDC: 539.5.015/019

ACC NR: AP7002863

gas impurities along the grain boundaries. NiSi, MnSi, FeSi, and CoSi single crystal compounds had brittle-to-plastic transition temperatures of 630, 810, 920 and 950C, respectively, compared with 900, 1140, 1240 and 1310C for polycrystalline compounds of the same composition. The difference is explained by the absence of boundary impurity brittleness in the single crystal compounds. The brittle-to-plastic transition of metallic compounds, as well as the observed drop in the electric conductivity which accompanied it, are explained by the disappearance of oriented interatomic bonds. The embrittling action of gas impurity segregations along the grain boundaries is explained by the formation of additional oriented bonds within the near-boundary zone of crystals. Hence, both the inherent and the impurity brittleness can have an identical, in principle, nature resulting from the existence of oriented interatomic bonds. Orig. art. has: 5 figures and 1 table.

SUB CODE: 11, 20/ SUBM DATE: 05Jul66/ ORIG REF: 010/ OTH REF: 004

Card 2/2

ACC NR: AP6036441

SOURCE CODE: UR/0370/66/000/006/0101/0109

AUTHOR: Novikov, I. I. (Moscow); Shashkov, D. P. (Moscow)

ORG: none

TITLE: The effect of melting and annealing conditions on the brittle-to-plastic transition temperature of metallic compounds

SOURCE: AN SSSR. Izvestiya. Metally, no. 6, 1966, 101-109

TOPIC TAGS: intermetallic compound, brittle compound, ductile compound, brittleness, ductility transition temperature, gas impurity effect, annealing, metal melting

ABSTRACT: Cast specimens of Al_3Mg_2 (37.3% Mg), $CuAl_2$ (53.45% Cu), and Cu_3Si (8.6% Si) compounds melted in air, in a vacuum of $5 \cdot 10^{-4}$ mm Hg, or in air with an air-steam mixture passed through the melt (to obtain compounds with various gas contents) were subjected to bend tests at temperatures of up to 600C. All compounds were found to have a very narrow (only several degrees) temperature of transition from brittle to ductile behavior; specimens melted with air-steam passed through the melt had the highest transition temperature (about 650C for Cu_3Si) and the highest microhardness. Vacuum-melted compounds had the lowest transition temperature (about 500C for Cu_3Si) and the lowest microhardness. Regardless of the melting conditions, the room-temperature microhardness of the grain boundaries was 20-40% higher than that of the grains, which can be explained by the segregation of gas impurities along the

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UDC: 539.4.015/019

ACC NR: AP6036441

grain boundaries. The grain-boundary microhardness of specimens annealed at various temperatures gradually decreased with increasing annealing temperatures, and with annealing at transition temperatures, became equal to the grain microhardness. This showed that the transition from brittle to ductile behavior of the investigated compounds was associated with the resorption of gas impurities. The harmful effect of gas impurities on the ductility and grain-boundary microhardness was confirmed by annealing the compounds in air and in vacuum. The transition temperature and grain-boundary microhardness increased with prolonged annealing in air due to a higher content of absorbed gas impurities, but decreased with prolonged vacuum annealing, which lowered the content of gas impurities. Orig. art. has: 7 figures and 1 table.

SUB CODE: 1113/ SUBM DATE: 25Dec64/ ORIG REF: 008/ OTH REF: 001/ ATD PRESS: 5108

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S/180/62/000/001/006/014
E039/E520

18.8/62

AUTHORS: Korol'kov, A.M. and Shashkov, D.P. (Moscow)

TITLE: The electrical resistivity of some alloys in the liquid state

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.1, 1962, 84-88

TEXT: While the structure of metals and alloys and their properties in the solid state have been studied extensively, the properties of liquid metal solutions have not. It is known from theory that in both the liquid and solid state short range order exists. Pure metals show an increase in electrical resistivity on heating and a marked jump on melting. The latter is due to the breakdown of the crystal lattice with a consequent loss of long range order. This paper describes the investigation of a number of alloys in the liquid state for which structural diagrams indicate both the absence of any appreciable mutual solubility of the components in the solid state (Al-Sn) as well as the existence of such solubility (Al-Cu; Pb-Sn; Al-Si; Al-Ge; Card 1/2

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S/806/62/000/003/011/018

10/10/0
AUTHORS: Korol'kov, A. M., Shashkov, D. P.

TITLE: Electrical conductivity of some liquid metals and alloys.

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniye splavov tsvetnykh metallov. no.3. 1962, 126-135.

TEXT: Following a thorough survey of existing literature on the phenomenon of electrical conductivity in solid and liquid metals and the various structural and other factors affecting it, the paper describes the results of an experimental investigation of binary alloys of a eutectic type based on Al and Pb (composition and purity of components tabulated). The investigation was conducted by A. R. Regel's rotating-magnetic-field method (ZhTF, v.18, no.12, 1948); its accuracy is $\pm 5\%$. A relatively simple variation of specific resistance (SR) versus composition, with a shallow depression in the vicinity of the eutectic point, obtains with those Al alloys, e.g., Al-Si and Al-Ge, in which there is no formation of chemical compounds. Si reduces the conductivity of liquid Al significantly near the eutectic point. In Al-Cu alloys, in which an Al-based solid solution and an intermetallic Al_2Cu compound exists, the SR increases with an addition of Cu to the Al, attains a maximum at 5.7% Cu, and, with Cu more than 10%, drops to less than the SR of pure Al. The Al-Ag alloys, both at $800^{\circ}C$ and at $(t_{liq} + 100^{\circ})$, exhibit a unique drop in SR with the addition of Ag. Ag-Zn alloys have a slightly depressed SR with 10% Zn, but the SR rises again.

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